

APRIL/MAY 2024

23PEPH24C — ADVANCED OPTICS

Time : Three hours

Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.



1. What is Interference?
2. Define Polarizer.
3. What is stimulated emission?
4. Write short note on population inversion.
5. How the pulse dispersion occurs?
6. Classify the types of modes in fiber optic communication system
7. What is harmonic generator?
8. List the types of harmonic generators.
9. How the inverse Zeeman effect occurs?
10. What is stark effect?

SECTION B — ($5 \times 5 = 25$ marks)

Answer ALL questions.

11. (a) Demonstrate the polarization of light by double refraction method.

Or

- (b) Explain the analysis of polarized light.

12. (a) Classify the various components of laser and give its functions.

Or

- (b) Illustrate the working of Nd-YAG laser with neat diagram.

13. (a) Explain the ray dispersion in multimode step index fiber.

Or

- (b) Show the relation between acceptance angle and the numerical aperture value of fiber optic.

14. (a) Give the outline of the optical mixing in a nonlinear crystal.

Or

- (b) Discuss the parametric generation of light in a crystal.

15. (a) Summarize the Electro-optical effects.

Or

- (b) Explain the important features of magneto optical effects.

SECTION C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain the interference of the polarized light through quarter wave plate and half wave plate.

17. Illustrate the energy level diagram and explain the function of semiconductor laser.

18. Analyze the various types of modes in fiber optic communication.

19. Elaborate the concept of phase matching.

20. Criticize the Electric double refraction method through various effect.